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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,155	03/17/2005	Shuichi Kubota	1207-114	2888

23117 7590 02/22/2007
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EXAMINER

MILLER, DANIEL H

ART UNIT	PAPER NUMBER
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1775

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/528,155

Applicant(s)

KUBOTA ET AL.

Examiner

Daniel Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/25/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1 are rejected under 35 U.S.C. 102(e) as being anticipated by Greinke (US 6,746,768).
3. Greinke teaches an expanded graphite sheet comprising graphite natural graphite flakes subject to an intercalating agent (column 5 line 55-65). The intercalating agent is a mixture including Phosphoric acid; where in the intercalating agent can comprise 10 to about 50 pph per 100 parts graphite flakes (column 6 line 27-33). This is considered an overlapping range with applicants claimed range.
4. The graphite flakes of Greinke are heated until they expand between about 80 and 1000 times their original volume. Then said expanded graphite is compressed and roll pressed into graphite sheets (column 7 line 45-65).

Claim Rejections - 35 USC § 103

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greinke (US 6,746,768).

6. Greinke teaches an expanded graphite sheet comprising graphite natural graphite flakes subject to an intercalating agent (column 5 line 55-65). The intercalating agent is a mixture including Phosphoric acid; where in the intercalating agent can exemplarily be 10 to about 50 pph per 100 parts graphite flakes (column 6 line 27-33). This is considered an overlapping range with applicants claimed range.

7. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

2. The graphite flakes of Greinke are heated until they expand between about 80 and 1000 times their original volume. Then said expanded graphite is compressed and roll pressed into graphite sheets (column 7 line 45-65).

3. The reference, discussed above, is silent as to the claimed structures of claims 3-7.

4. However, it would have been obvious to a person of ordinary skill in the art at the time of the invention to have anticipated the claimed structures to interact with the

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oxidative sites of the graphite and prevent oxidative attack and aid in intercalation and expansion of the graphite in the same manner as disclosed by Greinke. The reference teaches a wide variety of acids, including generically phosphoric acid, and encompasses other oxidizing agents (column 6 line 10-20) that function in substantially similar ways. Absent a showing of criticality with respect to the claimed compounds it would have been obvious to a person of ordinary skill in the art to vary an oxidative protective -R, -OH, or -H groups and still get a phosphoric acid with protective and expansive properties at high temperatures. No patentable distinction is seen.

5. Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greinke (US 6,746,768) in view of (JP410101316A).

8. Greinke teaches an expanded graphite sheet comprising graphite natural graphite flakes subject to an intercalating agent (column 5 line 55-65). The intercalating agent is a mixture including Phosphoric acid; where in the intercalating agent can comprise 10 to about 50 pph per 100 parts graphite flakes (column 6 line 27-33). This is considered an overlapping range with applicants claimed range.

9. The graphite flakes of Greinke are heated until they expand between about 80 and 1000 times their original volume. Then said expanded graphite is compressed and roll pressed into graphite sheets (column 7 line 45-65). Greinke is silent as to the structure of the phosphoric acid in the intercalating solution

10. (JP410101316A) teaches a heat resistant expanded graphite sheet (paragraph 0022-0024). Regarding claims 1 and 2, the graphite has organic phosphorous compounds, specifically phosphoric acids (0017). The graphite section can be 10 weight sections of phosphorous compounds (overlapping range) (paragraph 0019 of translation). Regarding claim 4 and 7, the formulas of graphite phosphorous additives claimed by applicant in claims 4 and 7 are taught by the reference in formula 1 (see paragraph 0013 of translation).

11. It would have been obvious to one of ordinary skill in the art at the time of the invention to include the phosphorous compounds of JP'316 to the graphite sheet of Greinke in order to enhance the heat dissipation properties and added fire retardant properties to a sheet that is designed to be exposed to heat such as Greinke.

6. The references, discussed above, are silent as to the claimed structures of claims 3, 5-6.

7. However, it would have been obvious to a person of ordinary skill in the art at the time of the invention to have anticipated the claimed structures to interact with the oxidative sites of the graphite and prevent oxidative attack in the same manner as the references disclosed phosphorous compounds. The reference teaches a wide variety of phosphorous groups that function in a substantially similar way. Absent a showing of criticality with respect to the claimed compounds it would have been obvious to a person of ordinary skill in the art to vary an oxidative protective -R, -OH, or -H groups and still get a phosphoric acid with protective properties at high temperatures. No patentable distinction is seen.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Miller whose telephone number is (571) 272-1534. The examiner can normally be reached on M-FTh.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Daniel Miller


JENNIFER MCNEIL
SUPERVISORY PATENT EXAMINER
2/19/04